SANTA MARIA PACIFIC LLC

April 23, 2009

Ms. Pat Abel
Department of Conservation
Division of Oil Gas and Geothermal Resources
5075 Bradley Road, Suite 221
Santa Maria, California 93455-5077

RE: Northwest Casmalia Oil Field Waste Water Disposal Project
Request for Minor Aquifer Exemption
Santa Barbara County, California

Dear Pat,

On April 2, 2009 you forwarded an e-mail to me from George Robin of the Environmental Protection Agency (EPA) citing the criteria and required documents for the approval of an aquifer exemption request under 40 CFR Parts 144.7 and 146.4 for a proposed Class II waste water (produced water) injection project at Santa Maria Pacific, LLC's (SMP) North West Casmalia Oil and Gas Field, located in Santa Barbara County California (Figure 1 and Figure 2).

Based on Mr. Robin's e-mail, the following responses address each of the criteria for an aquifer exemption approval for the Casmalia Field under 40 CFR:

§ 146.4 Criteria for exempted aquifers.

An aquifer or a portion thereof which meets the criteria for an "underground source of drinking water" in §146.3 may be determined under 40 CFR 144.8 to be an "exempted aquifer" if it meets the following criteria:

(a) It does not currently serve as a source of drinking water; and

(b) It cannot now and will not in the future serve as a source of drinking water because:

(1) It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible.

(2) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;

(3) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or

(4) It is located over a Class III well mining area subject to subsidence or catastrophic collapse; or

(c) The total dissolved solids content of the ground water is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.

§ 144.7 Identification of underground sources of drinking water and exempted aquifers.

(2) For Class II wells, a demonstration of commercial producibility shall be made as follows:

(i) For a Class II well to be used for enhanced oil recovery processes in a field or project containing aquifers from which hydrocarbons were previously produced, commercial producibility shall be presumed by the Director upon a demonstration by the applicant of historical production having occurred in the project area or field.

(ii) For Class II wells not located in a field or project containing aquifers from which hydrocarbons were previously produced, information such as logs, core data, formation description, formation depth, formation thickness and formation parameters such as permeability and porosity shall be considered by the Director, to the extent such information is available.

SMP Response: The proposed zone of injection is within the Monterey formation which appears to be a continuous extension of the oil productive Monterey formation within the 100 year old California State Designated Casmalia Oil Field located approximately 2 miles south west (down dip) of SMP's Casmalia operations (Figure 3).

SMP's NW Casmalia Field is situated in an area that consists of uplifted marine formations that exist within the Casmalia Hills outside the bounds of the SMV Basin. The oil exploration and production target zone is located within the Tertiary geologic period of the lower Pliocene and upper Miocene epoch within the formations commonly referred to as the Sisquoc and Monterey respectively. Both formations are oil bearing in the Casmalia Hills area (Figures 4 through 7). Neither formation contains fresh water. The area of oil development interest is situated where surface outcrops of the two zones occur eliminating the possibility of overlying perched groundwater zones to be present.

The uppermost layer of groundwater, if present, is characterized as a layer of brackish water perched atop layers of soil and gravel and in the cracks of bedrock that blanket the Casmalia Hills. The source of the small amount of perched groundwater encountered in

the Casmalia Hills is a result of rain water that percolates through the upper soil horizon(s) that accumulates in sediments and in fractures in the underlying bedrock. The bedrock underlying the Casmalia Hills drops downward to form the Santa Maria Valley Basin which is filled with gravel and sand deposits. The perched water layer is classified as non-potable for human use.

The nature of the oil extraction operation involves proprietary steam injection methods into the Sisquoc and Monterey formations. The injected steam does not contain concentrations of toxic substances or additives that could potentially cross contaminate the intended injection zones. The density of the steam that condenses into water is approximately equal to or slightly lower than the density of naturally occurring fluids within the targeted oil bearing formations. There is no evidence of circulation existing within the target zones. Based on these considerations the possibility of fluid migration away from the operations is virtually eliminated.

The Santa Maria Valley Groundwater Basin currently serves as the source of drinking water in the area. Water bearing units within the SMV Basin consist of alluvium, dune sands, and the Orcutt, Paso Robles, Pismo, and Careaga Formations. The NW Casmalia Oil and Gas Field is situated along the western/south south western edge of the Santa Maria Valley (SMV) Groundwater Basin (Figure 3). The SMV Basin is an alluvial basin that is located in the northwest portion of Santa Barbara County and extends into the southwest portion of San Luis Obispo County. The aquifer is essentially continuous with exception of clay lenses that cause localized confinement (2002 Santa Barbara County Groundwater Report – Santa Barbara County Public Works).

The town of Casmalia, Ca. is situated to the west of the subject site. Currently Casmalia receives its drinking water from a well completed in the Santa Maria Groundwater Basin located east of the NW Casmalia Oil and Gas Field. The well is operated by "Casmite" Corporation a subsidiary of Chevron. Groundwater is pumped from the water supply well, west, to a water supply tank situated above the town at a high point within the Casmalia Hills (east of town) from which Casmalia draws its domestic water needs (Figure 8).

Delineation and testing of the saturated diatomite reservoir within the Sisquoc formation at the NW Casmalia Field was initiated by SMP in June of 2005. To date a total of 16 oil and gas wells have been drilled and completed. An additional 29 oil and gas wells are planned and permitted under an existing Land Use Permit issued by the County of Santa Barbara issued to SMP in June of 2005 (Revised in July of 2007 and February of 2006). Three of the existing wells will be utilized as produced water injection wells when the field is operational. During the delineation and testing of the Sisquoc formation, four of the well borings were extended into the Monterey Formation displaying the following results:

- A mud log from SMP's 30821 drilled in 2005 displayed robust shows of hydrocarbon across the Monterey Formation (Attachment 1).

- The di-electric log in well 30511 calculates 25% to 40% oil saturation across the Monterey Formation (Attachment 2).
- A side wall core collected from well 30206 displayed good oil saturation (Attachment 3).
- Well 30622 was tested on primary production and producing 30 barrels of 15 degree API oil over a span of 11 days.

Based on this data, the Monterey formation contains hydrocarbons that are expected to be commercially producible.

Samples of the Monterey Formation fluid (water and oil) "30511 Water Sample" were collected from the "Stokes B 30511" oil and gas well on August 16, 2006. The aqueous sample was analyzed by Oil Field Environmental and Compliance, Inc. (a California State Certified Analytical Laboratory). The sample was analyzed for a variety of water quality parameters including Total Dissolved Solids (TDS) utilizing EPA Test Method 160.1. Analytical results displayed a TDS concentration of **5,400 mg/l**, which falls within the range of 3,000 mg/l and 10,000 mg/l which is not reasonably expected to supply a public water supply system as outlined above (Lab Reports are included in Attachment 4).

Based on the contents and discussions in this letter, SMP feels that an aquifer exemption for the NW Casmalia Field from EPA is warranted.

Please let us know if you need any additional information or if you have any questions or comments.

Sincerely,

Richard H. Field II
Manager of Regulatory Affairs
Santa Maria Pacific, LLC

Figures:

- Figure 1 – Site Vicinity
- Figure 2 – NW Casmalia Base Map with Aerial Photo
- Figure 3 – Injection Area
- Figure 4 – Top of Monterey Formation
- Figure 5 – NE-SW Cross Section
- Figure 6 – Casmalia Surface Geology
- Figure 7 – Cross Section B-B'
- Figure 8 – Casmalia Base Map Showing Casmite Well Locations and Town of Casmalia

Attachments:

- Attachment 1 – Monterey Formation Oil Shows in Stokes B 30821

- Attachment 2 – Northwest Casmalia Monterey Saturation Observation
- Attachment 3 – Sidewall Cores Analysis Results – Stokes A 30206, Core Lab, March 3, 2006.
- Attachment 4 – OEC Laboratory Reports – Analytical Results Representing Casmalia Monterey Formation Fluid – "Stokes B" 30511

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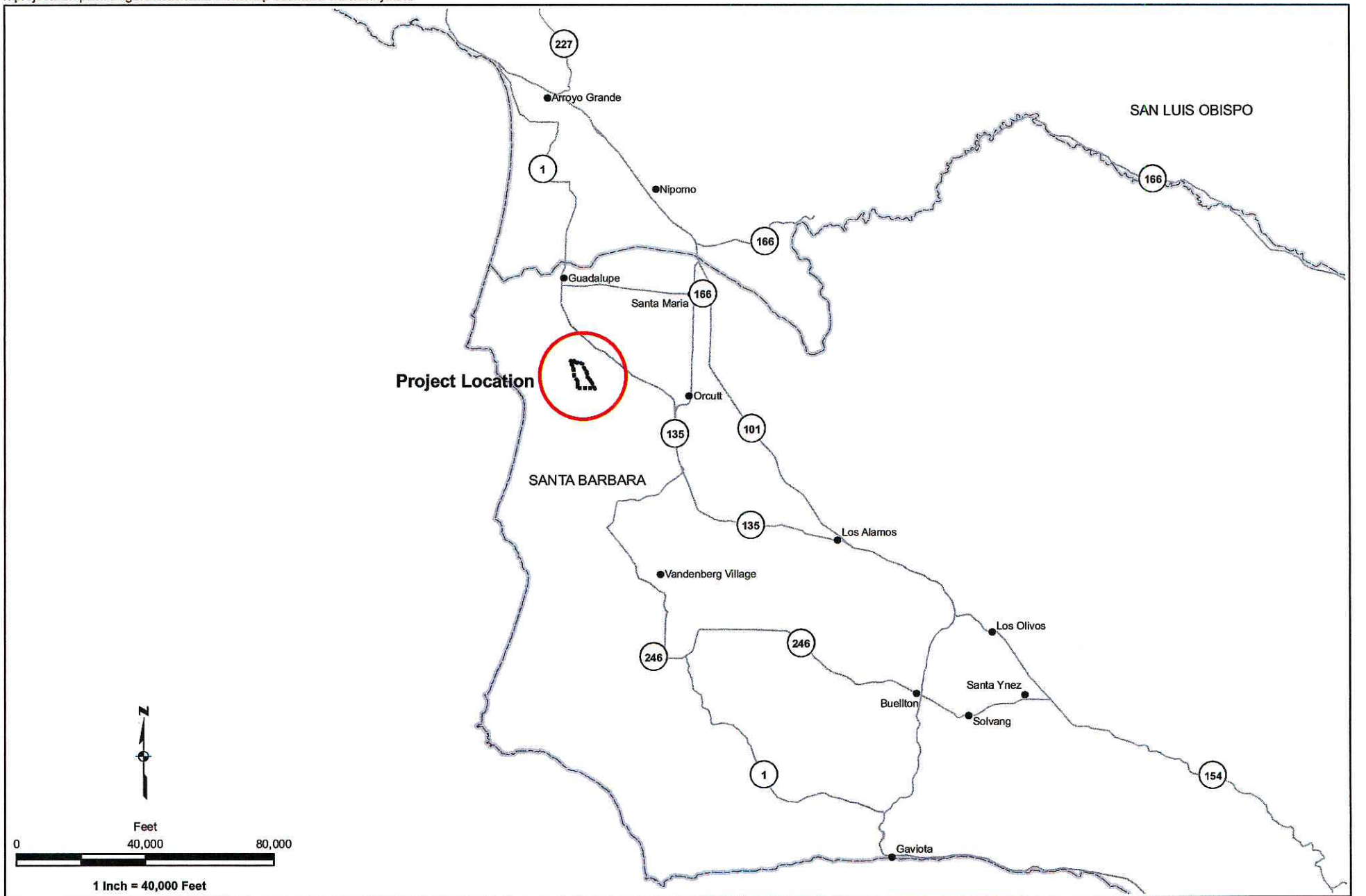

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(805) 782-0969

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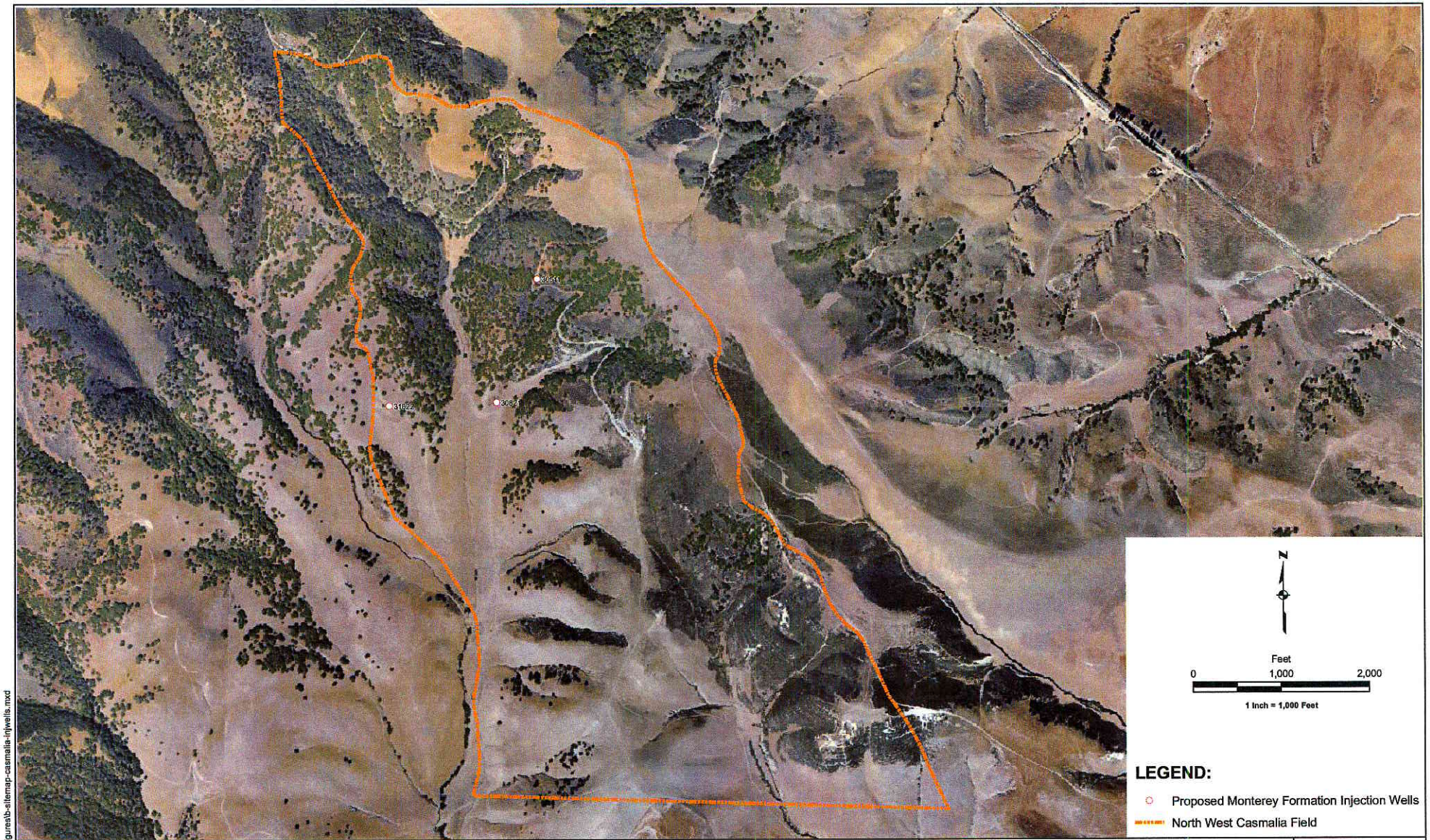
Figure 1: Site Vicinity Map

July 31, 2008



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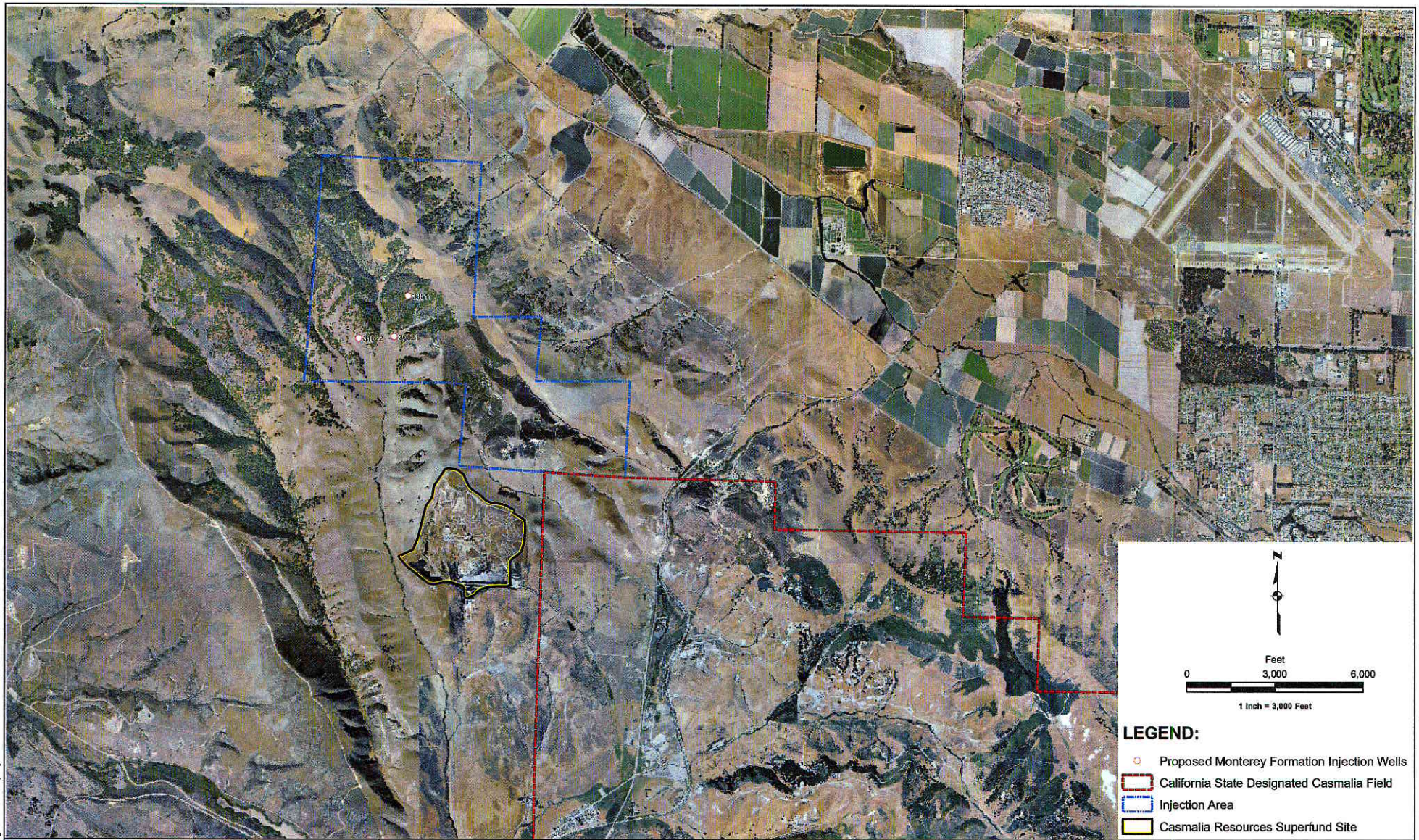
North West Casmalia Field

North West Casmalia Oil and Gas Field
Proposed Waste Water Injection Project
Injection Well Locations

April 23, 2009



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Santa Maria Pacific

Figure 3 - Injection Area

April 23, 2009

Figure 4

Top of Monterey

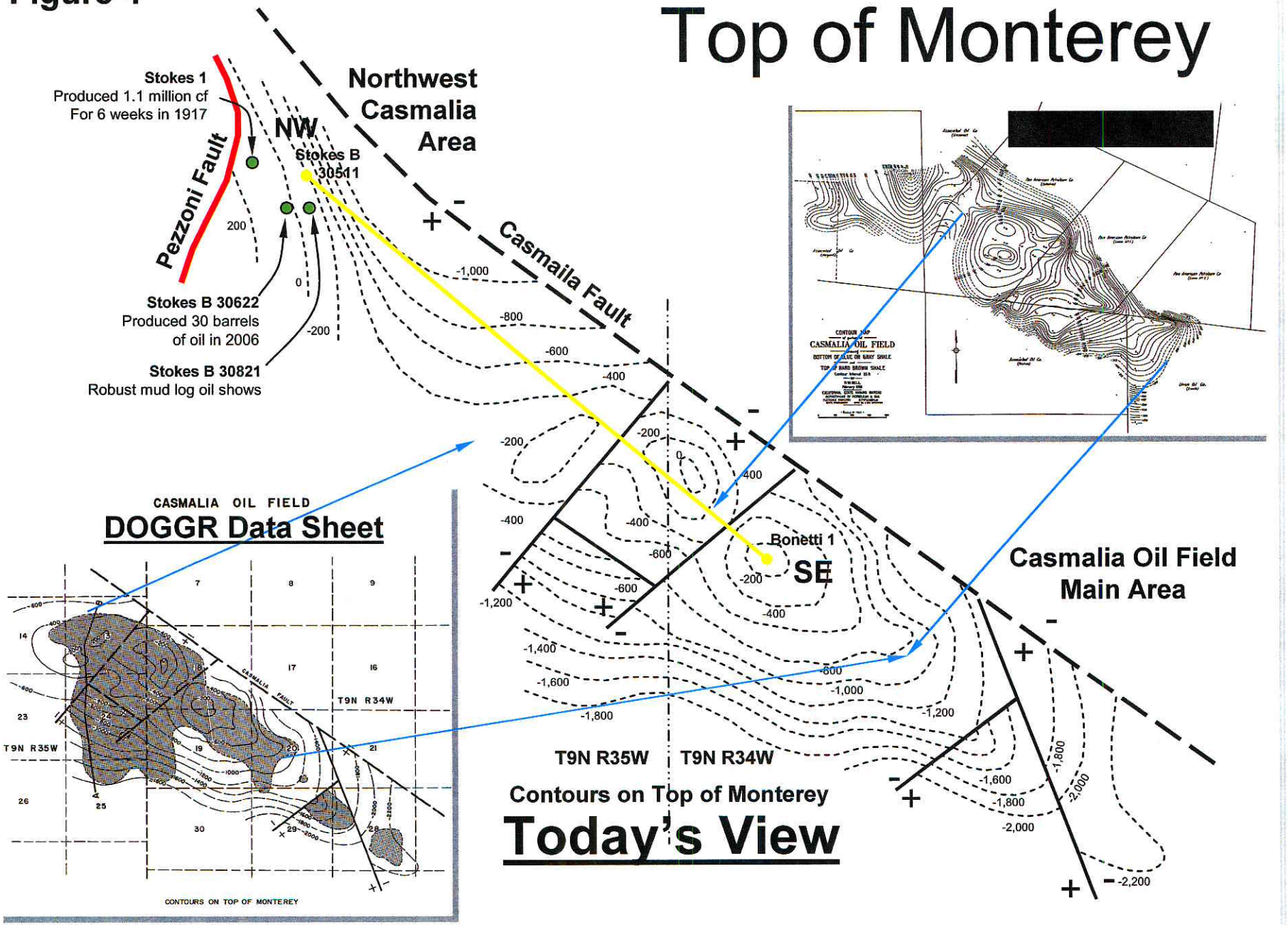


Figure 5

NE-SW Cross-section

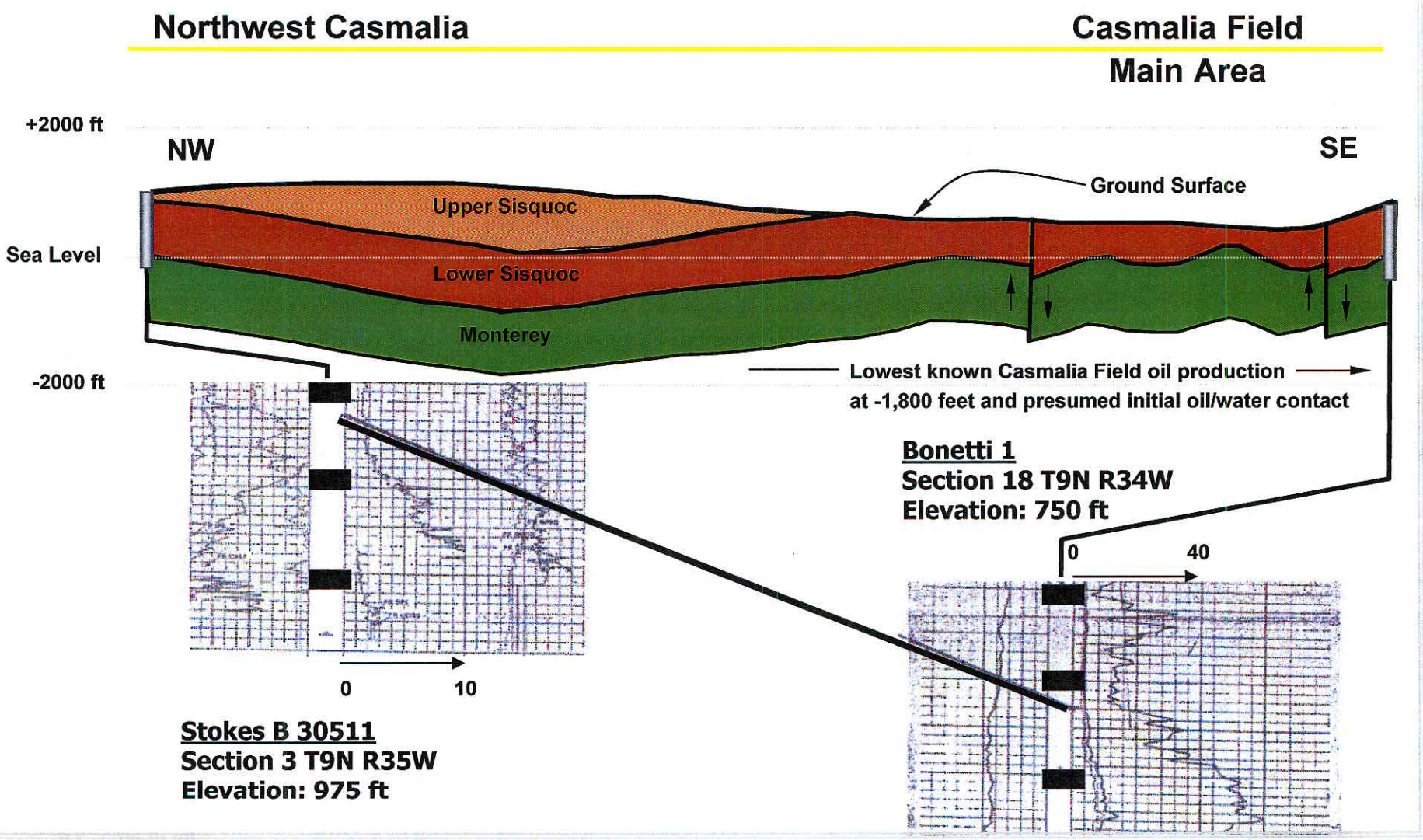


Figure 6

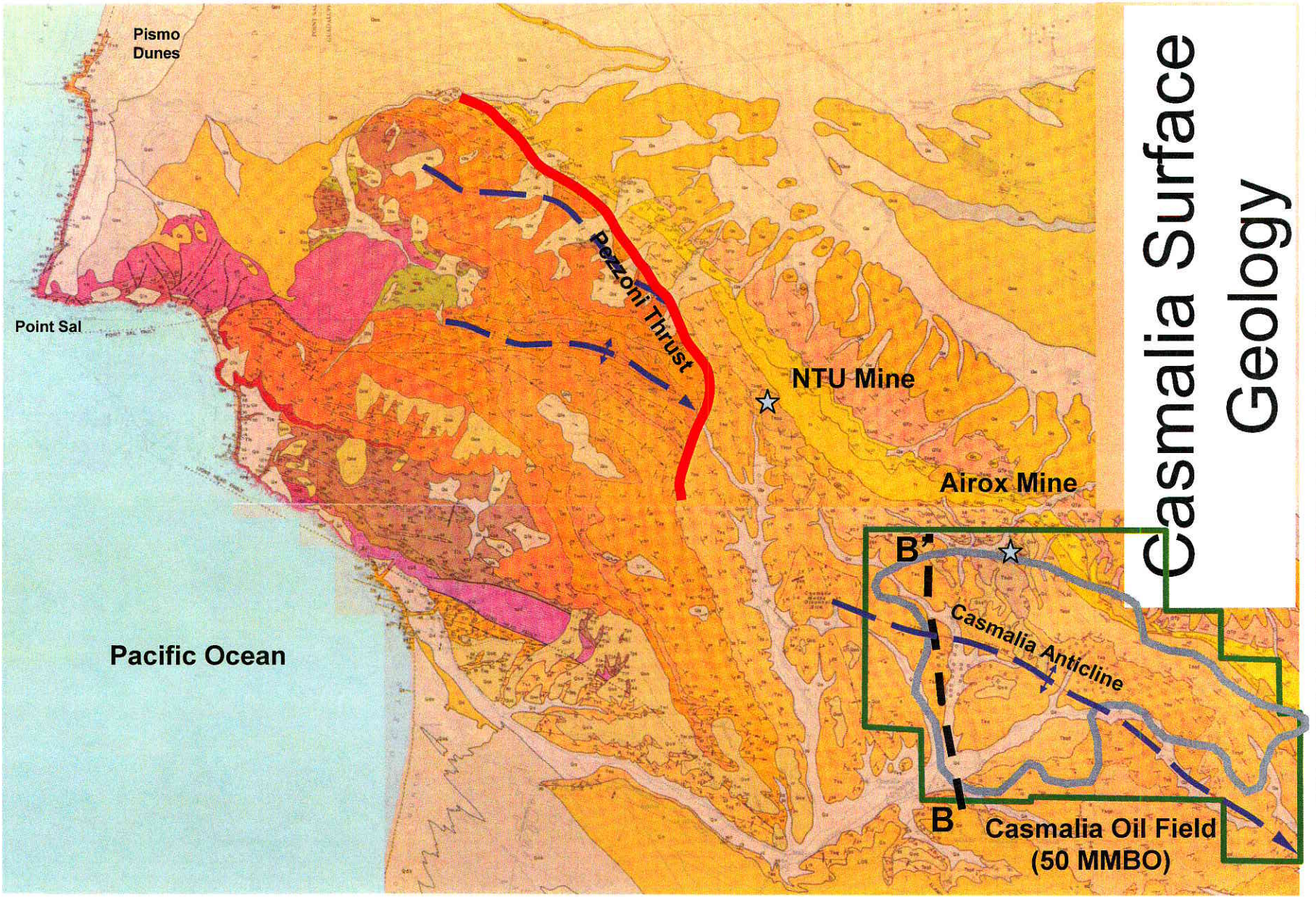
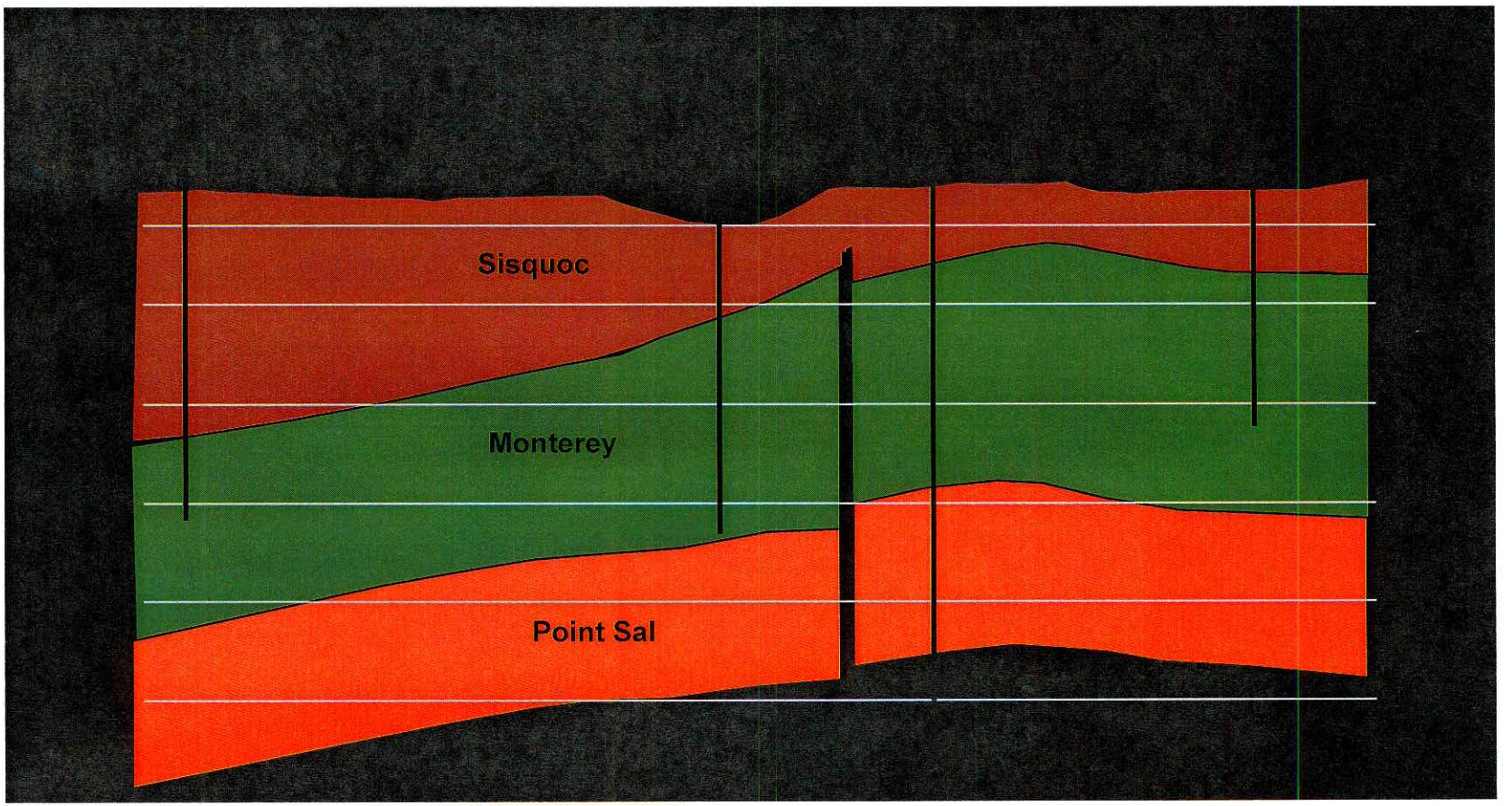
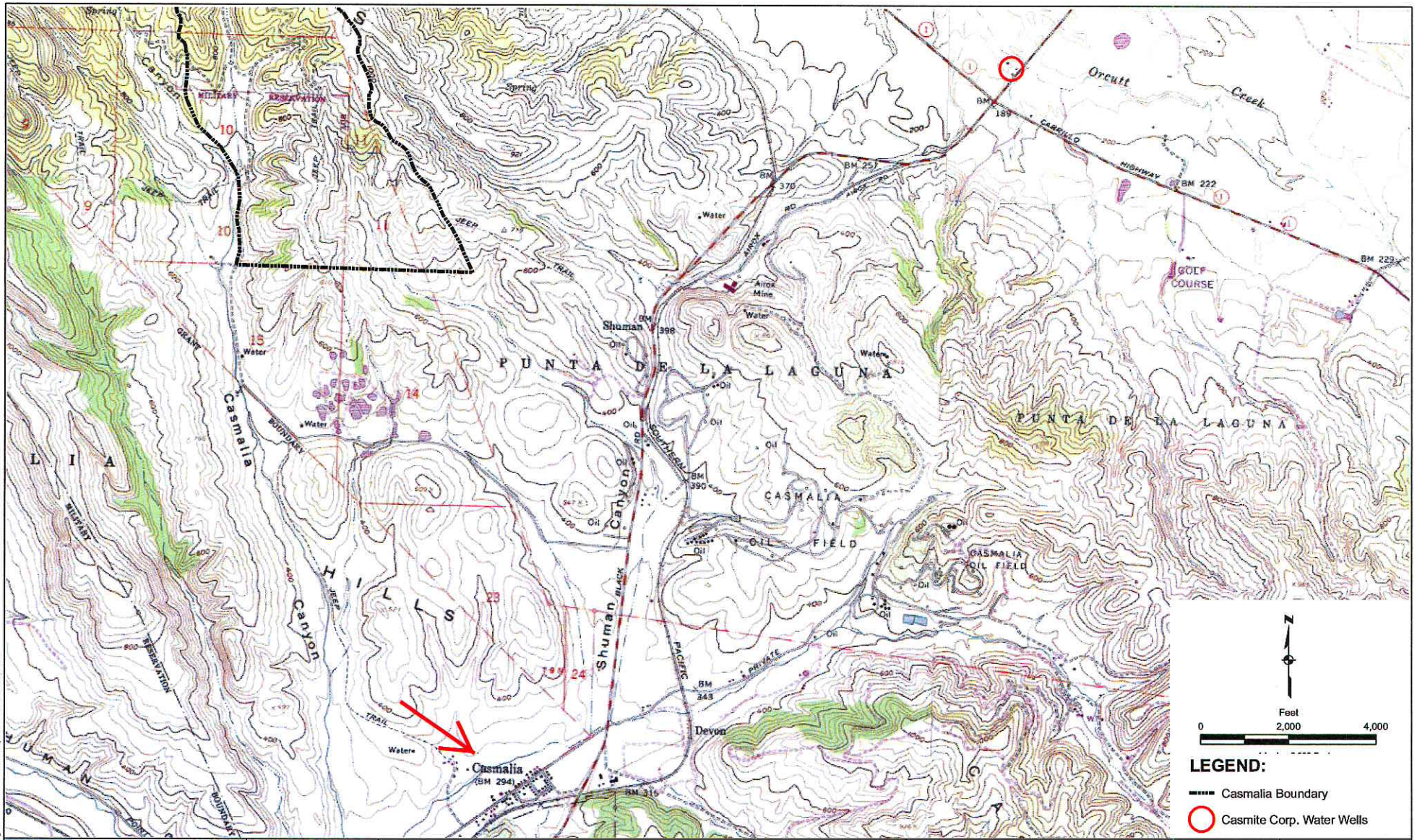

Pismo
Dunes
Point Sal
Pacific Ocean
Pezzoni Thrust
NTU Mine
Airox Mine
B'
B
Casmalia Anticline
Casmalia Oil Field
(50 MMBO)
Casmalia Surface
Geology

Figure 7

Cross Section B-B'





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5:

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Casmalia Field

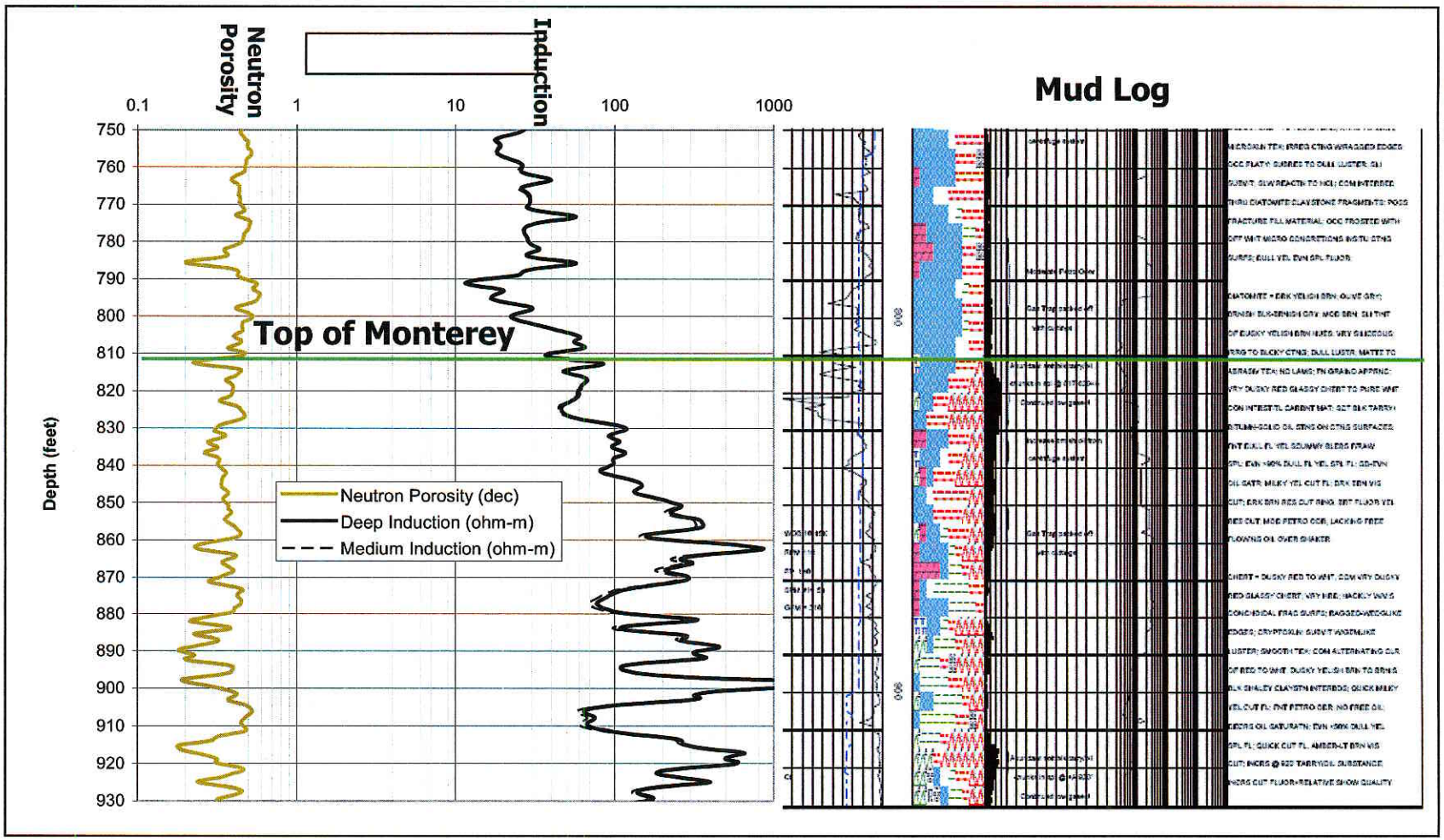
Figure 8 **Casmalia Basemap showing Casmite Well Locations and the Town of Casmalia**

August 11, 2008 MRB

ATTACHMENT 1:

MONTERY FORMATION OIL SHOWS IN STOKES B 30821

Monterey formation oil shows in Stokes B 30821

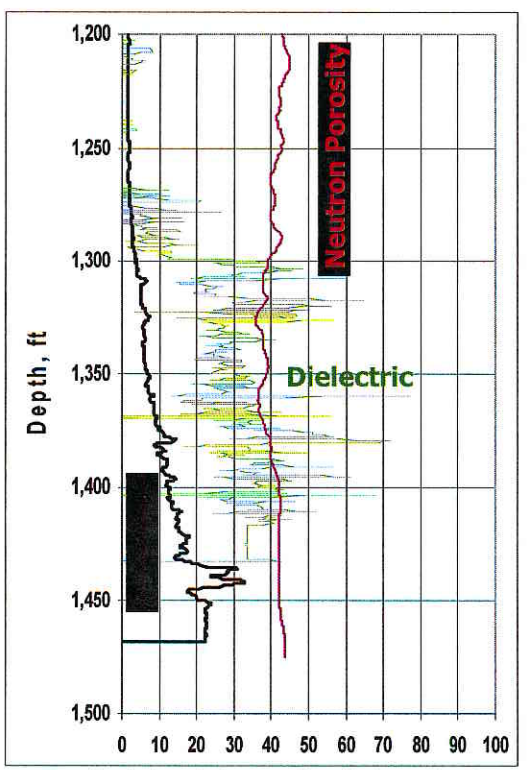


ATTACHMENT 2:

NORTHWEST CASMALIA MONTEREY SATURATION OBSERVATION

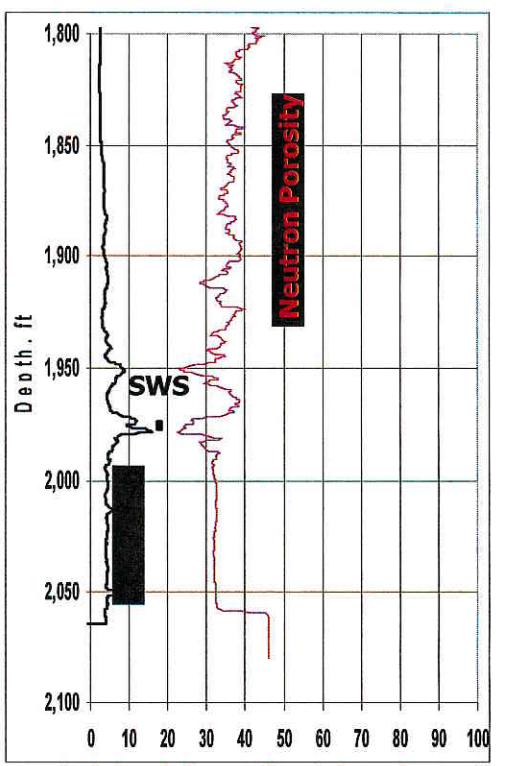
Northwest Casmalia Monterey Saturation Observations

Stokes B 30511
Section 3 T9N R35W
Elevation: 975 ft



Resistivity (ohm-m), Dielectric So (%), Neutron Porosity (%)

Stokes A 30206
Section 3 T9N R35W
Elevation: 975 ft



Resistivity (ohm-m), Dielectric So (%), Neutron Porosity (%), SWS So (%)

ATTACHMENT 3:

SIDEWALL CORES ANALYSIS RESULTS – STOKES A 30206, CORE LAB, MARCH 3, 2006

Company: Santa Maria Pacific LLC
Well: Stokes A 30206
Field: Sata Maria

Location: Sec 3-9N-35W
Elevation: 1008' KB
Drlg Fluid: Gel

File No.: 57111-106109SM
API No.: 04-083-22393
Date: 3\3\2006

Sidewall Cores Analysis Results

Sample Number	Depth	Rec	Perm. Kair	Porosity	Fluid Saturation				Grain Den	Smpl Wt.	Mthd	Description	
					Oil	Water	O/W	Total					
	ft	inches	md	%	%	%	Ratio	%	g/cc	g			
	537.0											No recovery	
1	552.0	2.0	<5.0	46.6	18.8	76.2	0.25	95.0	2.49	8.4	3	Diat brn cly m stn vdorng flor	
2	637.0	2.0	<1.0	44.6	56.4	38.7	1.46	95.2	2.40	8.1	3	Diat dbrn cly d stn vdorng flor	
3	669.0	2.0	<1.0	36.5	0.7	96.2	0.01	96.9	2.53	8.6	3	Slt gry-brn diat cly l stn vdorng flor	
4	758.0	2.0	<1.0	40.8	6.4	87.9	0.07	94.3	2.60	9.1	3	Slt gry-brn diat vcly l stn vdorng flor	
5	809.0	2.0	<1.0	49.4	40.1	48.7	0.82	88.8	2.45	8.8	3	Diat dbrn gils d stn vdorng flor	
6	960.0	2.0	<1.0	36.4	33.2	63.4	0.52	96.5	2.43	9.0	3	Mdst brn diat cly d stn vdorng flor	
7	997.0	1.8	<5.0	48.3	48.5	40.7	1.19	89.2	2.49	8.5	3	Diat dbrn slty gil d stn vdorng flor	
8	1034.0	1.7	<5.0	49.2	54.7	39.6	1.38	94.2	2.34	9.3	3	Diat dbrn slty gil d stn vdorng flor	
9	1048.0	2.0	<5.0	58.2	37.9	52.9	0.72	90.8	2.38	5.7	3	Diat dbrn cly gil d stn vdorng flor	
10	1069.0	2.0	<5.0	55.8	28.8	62.7	0.46	91.5	2.41	7.6	3	Diat dbrn cly gil d stn vdorng flor	
11	1075.0	1.8	<5.0	48.2	49.4	40.3	1.22	89.7	2.55	8.1	3	Diat dbrn cly gil d stn vdorng flor	
12	1106.0	1.1	<5.0	62.2	39.7	53.8	0.74	93.4	2.47	8.1	3	Diat dbrn cly gil d stn vdorng flor	
13	1124.0	1.6	<5.0	51.5	25.3	66.2	0.38	91.5	2.39	7.1	3	Diat dbrn cly gil d stn vdorng flor	
14	1166.0	2.0	<5.0	58.1	26.1	58.3	0.45	84.4	2.49	6.8	3	Diat dbrn cly d stn vdorng flor	
15	1212.0	1.2	<5.0	55.4	28.6	54.1	0.53	82.7	2.48	6.5	3	Diat dbrn cly d stn vdorng flor	
16	1255.0	1.4	<5.0	54.1	29.0	55.5	0.52	84.5	2.53	4.0	3	Diat dbrn cly d stn vdorng flor	
17	1330.0	1.8	<1.0	45.8	17.5	70.3	0.25	87.8	2.56	7.3	3	Diat dbrn cly d stn vdorng flor	
	1481.0											No recovery	
18	1541.0	0.7	<1.0	42.7	25.8	56.2	0.46	82.0	2.40	7.8	3	Diat dbrn cly d stn vdorng flor	
19	1636.0	1.0	<1.0	42.9	17.8	71.7	0.25	89.4	2.67	7.1	3	Diat dbrn cly d stn vdorng flor	
20	1705.0	1.2	<1.0	50.3	18.0	64.5	0.28	82.4	2.57	5.7	3	Diat dbrn cly d stn vdorng flor	
	1946.0											Diat dbrn cly d stn vdorng flor	
21	1976.0	0.6	<1.0	43.1	15.9	61.3	0.26	77.2	2.64	7.6	3	Diat dbrn cly vmuddy d stn vdorng flor	**Monterey Formation**

Solid Organic Material (Kerogen), If Present, May Contribute To Oil Saturation.

ATTACHMENT 4:

OEC LABORATORY REPORTS – ANALYTICAL RESULTS REPRESENTING CASMALIA MONTERY FORMATION FLUID – STOKES B 30511

OILFIELD ENVIRONMENTAL AND COMPLIANCE, INC.

Client: Santa Maria Pacific LLC. P.O. 7202 Santa Maria, CA 93456 Attn: Ramon Elias Project: Stokes 30511 Client ID: Stokes 30511 Matrix: Aqueous	SAMPLE ID: 06-1736-4 Date Received: 8/2/06 Date Sampled: 8/2/06 Lab Contact: J. Carstens

Report Of Analytical Results

Constituent	Analysis Results	Reporting Units	PQL	Method	Analysis Date
Chloride	840	mg/L	40	EPA 300.0	8/3/06
Conductivity	8900	µmhos/cm	10	SM 2510	8/3/06

PQL = Practical Quantitation Limit
Results listed as ND would have been reported if present at or above the listed PQL
Raised PQL's due to dilution

Julius G. Carstens, Lab Director

307 ROEMER WAY I SUITE 300 I SANTA MARIA I CA 93454 I (805) 922-4772 I FAX (805) 925-3376

OILFIELD ENVIRONMENTAL AND COMPLIANCE, INC.

Client: Santa Maria Pacific LLC.	SAMPLE ID: 06-1876-1
P.O. 7202	Date Received: 8/16/06
Santa Maria, CA 93456	Date Sampled: 8/16/06
Attn: Ramon Elias	
Project: Casmalia Field	
Client ID: 30511 Water Sample	
Matrix: Aqueous	Lab Contact: J. Carstens

Report Of Analytical Results

Constituent	Analysis Results	Reporting Units	PQL	Method	Analysis Date
Alkalinity	1700	mg/L	2.0	SM 2320B	8/24/06
Chloride*	930	mg/L	40	EPA 300	8/17/06
Conductivity*	9700	µmhos/cm	20	SM 2510	8/17/06
Nitrate as N*	ND	mg/L	4.0	EPA 300	8/17/06
Nitrite*	ND	mg/L	4.0	EPA 300	8/17/06
pH	8.5	units	0.1	EPA 150.1	8/22/06
Sulfate*	1400	mg/L	40	EPA 300	8/17/06
TDS*	5400	mg/L	100	EPA 160.1	8/25/06
Calcium*	55	mg/L	5.0	EPA 6020	8/23/06
Hardness*	140	mg/L	5.2	EPA 6020	8/23/06
Copper*	0.027	mg/L	0.002	EPA 6020	8/23/06
Iron*	0.11	mg/L	0.05	EPA 6020	8/23/06
Potassium*	2.2	mg/L	0.2	EPA 6020	8/23/06
Magnesium*	0.9	mg/L	0.2	EPA 6020	8/23/06
Manganese*	ND	mg/L	0.01	EPA 6020	8/23/06
Sodium*	80	mg/L	5.0	EPA 6020	8/23/06
Zinc*	0.028	mg/L	0.002	EPA 6020	8/23/06

PQL = Practical Quantitation Limit
Results listed as ND would have been reported if present at or above the listed PQL
*** Raised PQL's due to dilution**

Julius G. Carstens, Lab Director

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OILFIELD ENVIRONMENTAL AND COMPLIANCE, INC.

Client: Santa Maria Pacific LLC.	SAMPLE ID: 06-1814-1
P.O. 7202	Date Received: 8/9/06
Santa Maria, CA 93456	Date Sampled: 8/9/06
Attn: Ramon Elias	
Project: Stokes Field	
Client ID: Stokes 30511	
Matrix: Aqueous	Lab Contact: J. Carstens

Report Of Analytical Results

Constituent	Analysis Results	Reporting Units	PQL	Method	Analysis Date
Chloride	860	mg/L	40	EPA 300.0	8/10/06
Conductivity	9200	µmhos/cm	20	SM 2510	8/10/06

PQL = Practical Quantitation Limit
Results listed as ND would have been reported if present at or above the listed PQL
Raised PQL's due to dilution

Julius G. Carstens, Lab Director

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OILFIELD ENVIRONMENTAL AND COMPLIANCE, INC.

Client: Santa Maria Pacific LLC.	SAMPLE ID: 06-1736-1->4
P.O. 7202	Date Sampled: 08/02/06
Santa Maria, CA 93456	Date Analyzed: 08/03/06
Attn: Ramon Elias	Date Received: 08/02/06
Project: Stokes 30511	Lab Contact: J. Carstens

Report Of Analytical Results

OEC ID	Client ID	Constituent	Results	Units	Method	PQL
06-1736-1	Careaga # 7	API Gravity	14.6	API	ASTM D-287	0.1
06-1736-2	Careaga # 11	API Gravity	15.0	API	ASTM D-287	0.1
06-1736-3	Careaga # 12	API Gravity	14.4	API	ASTM D-287	0.1
06-1736-4	Stokes 30511 (Water)	API Gravity	9.0	API	ASTM D-287	0.1

ND - Not Detected at or above the PQL (Practical Quantitation Limit)

Julius G. Carstens, Lab Director

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OILFIELD ENVIRONMENTAL AND COMPLIANCE, INC.

Client: Santa Maria Pacific LLC.	SAMPLE ID: 06-1814-1
P.O. 7202	Date Sampled: 08/09/06
Santa Maria, CA 93456	Date Analyzed: 08/11/06
Attn: Ramon Elias	Date Received: 08/09/06
Project: Stokes 30511	Lab Contact: J. Carstens

Report Of Analytical Results

OEC ID	Client ID	Constituent	Results	Units	Method	PQL
06-1814-1	Stokes 30511 (Water)	API Gravity	9.0	API	ASTM D-287	0.1

ND - Not Detected at or above the PQL (Practical Quantitation Limit)

Julius G. Carstens, Lab Director

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OILFIELD ENVIRONMENTAL AND COMPLIANCE, INC.

Client: Santa Maria Pacific LLC P.O. 7202 Santa Maria, CA 93456 Attn: Ramon Elias	SAMPLE ID: 06-1876-1 Date Sampled: 08/16/06 Date Analyzed: 08/18/06 Date Received: 08/16/06
Project: Casmalia Field	Lab Contact: J. Carstens

Report Of Analytical Results

OEC ID	Client ID	Constituent	Results	Units	Method	PQL
06-1876-1	Stokes 30511 (Water)	API Gravity	8.9	API	ASTM D-287	0.1

ND - Not Detected at or above the PQL (Practical Quantitation Limit)

Julius G. Carstens, Lab Director

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